

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY**

**TOWN OF FRAMINGHAM REQUEST FOR
DETERMINATION OF RATES APPLICABLE TO
TRANSPORTATION AND TREATMENT OF
SEWAGE PURSUANT TO INTERMUNICIPAL
AGREEMENT**

D.T.E. 02-46

**TOWN OF FRAMINGHAM'S RESPONSE TO DTE'S
BRIEFING QUESTION REGARDING CAPITAL COST ALLOCATION**

Clearly explain your proposed method for allocating *capital* costs. Explain the data needed to allocate *capital* costs according to the method you propose. If a flow ratio is used, explain the appropriate measure of flow (*e.g.*, average, peak, instantaneous peak); define the measure of flow in detail, including the type of raw data needed, whether it is currently collected or would need to be collected or estimate by new meters or methods, and any relevant time intervals or averaging periods. Finally provide a sample calculation of the allocation of the costs of a hypothetical capital project in which Ashland shares the expenses.

Response:

We propose the following formula to allocate the costs of capital projects on a “shared” pipe basis. Capital projects can include repair, rehabilitation, replacement, upgrade, etc. The capital cost allocation method that we propose for the Ashland/Framingham IMA is the following:

$$\text{Ashland's share of project costs} = \frac{Q_A}{Q_A + Q_F} \times \$F$$

$$\text{Framingham's share of project costs} = \frac{Q_F}{Q_A + Q_F} \times \$F$$

These formulas are consistent with prior testimony given by Mr. Geribo and found in Framingham's response to DTE F-4-3(c).

For purposes of this formula, the definitions and source of information for the formula are as follows:

Name	Parameter	Source of Information / Calculation
Q _A	Peak* Flow from Ashland	The values should be based upon the peak flows codified in the IMA. The current IMA specifies 2.5 mgd and 200 gpm for the Farm Pond and Beaver Dam Brook connections, respectively. Any need for additional capacity will be based on the projected peak flow as determined from planning studies undertaken by Ashland.
Q _F	Peak* Flow from Framingham	Framingham's peak flow through the specific infrastructure undergoing a capital project. This is defined as the difference between the design capacity ¹ of the infrastructure and the peak flow from Ashland. Any need for additional capacity will be based on the projected peak flow determined from planning studies undertaken by Framingham.
\$ _F	Cost of Project	Total project cost including all engineering, permitting, construction and other costs associated with the project.

*Peak is defined as instantaneous peak obtained over a five minute interval in accordance with the existing IMA.

¹Design capacity is the mathematical capacity of the shared pipe based upon the application of Manning's formula for sewer infrastructure. The calculation will be based upon "full pipe" flow.

These are two possible scenarios that could result in capital projects along the shared pipe system:

The following examples are included to illustrate the implementation of this formula. These hypothetical examples are only for illustration purposes and are not intended to bear any resemblance to actual flows or costs.

Scenario 1. Existing pipe requires rehabilitation or replacement – **with neither town needing an increase in flow.**

Scenario 2. Existing pipes require replacement with larger pipes due to **a need from both towns for increases in flows.**

Scenario 1 Example

The first example involves a major repair to a shared facility, where neither town requests an increase in flow.

Hypothetical Case:

Shared Pipe	A segment of pipe along the Beaver Dam Interceptor
Problem	A segment of the pipe has been discovered with substantial root intrusion along the entire length of sewer. Framingham is following a recommendation that requires an interior chemical treatment process to prevent further root growth as well as the clearing of the easement of large trees.
Flow Ratio	Peak flows from Ashland for this example is 200 gpm (from the IMA). The peak flow from Framingham would be calculated based upon the remaining capacity of the pipe. This calculation would require pipe condition and slope data, which is readily obtainable from performing a limited field survey to obtain sewer invert elevations and to ascertain pipe materials and condition. In this example the capacity of the pipe is 2200 gpm. Thus, Framingham's "peak flow" will be 2000 gpm (2200-200).
Cost	The total cost of this project is \$100,000, including engineering, construction and other related costs.

The cost allocation for the project would be as follows:

$$\text{Ashland's share of project costs} = \frac{200}{200 + 2000} \times \$100,000 = \$9,090.91$$

$$\text{Framingham's share of project costs} = \frac{2000}{2000 + 200} \times \$100,000 = \$90,909.09$$

Scenario 2 Example

The second example involves the need to increase capacity in an existing shared pipe as a result of both communities needing an increase in flow.

Hypothetical Case:

Shared Pipe	A segment of the Farm Pond Interceptor
Problem	The existing pipe has insufficient capacity to meet the future flows from both communities and a replacement pipe must be constructed. Ashland, through its own planning studies and investigations, has determined it will require 3.5 mgd (2430 gpm) of peak capacity. Similarly, Framingham has determined from its own planning studies and investigations that it will require 6.0 mgd (5,000 gpm).
Flow Ratio	Ashland's peak flow for this example is 2430 gpm, and Framingham's peak flow is 5,000 gpm.
Cost	The total cost of this project including engineering, construction, and other related costs, is \$2,000,000.

The cost allocation for the project would be as follows:

$$\text{Ashland's share of project costs} = \frac{2430}{2430 + 5000} \times \$2,000,000 = \$654,104.98$$

$$\text{Framingham's share of project costs} = \frac{5000}{5000 + 2430} \times \$2,000,000 = \$1,345,895.02$$

Respectfully submitted,
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